

### REMARKS

This application has been reviewed in light of the Office Action dated January 3, 2003. Claims 10-25 are pending in this application with Claims 10, 19, 20, and 23 in independent form. Claim 25 has been added to provide Applicant with a more complete scope of protection. Claims 10-14, 18-20, and 23 have been amended to define more clearly what Applicant regards as the invention. Favorable reconsideration is requested.

Claims 10-24 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. These rejections were based upon two reasons. The first reason was based upon allegedly insufficient structure recited within the claims to establish a difference between the first and second diffraction gratings, since both gratings had a common pitch. In response, Applicant has amended the independent claims to recite that -- a coupling coefficient of the diffraction grating of said second region adjacent to said phase controlling region is smaller than a coupling coefficient of the diffraction grating of said first region--, thereby distinguishing between the first and second diffraction gratings.

The second reason was based upon the claimed ordering of the phase controlling region, the first region, and the second region, allegedly being contradictory to that described in the specification. Applicant respectfully traverses this position. In particular, the claim language, prior to the changes made by this Amendment, stated that "a coupling coefficient of said first region adjacent to said phase controlling region is smaller than a coupling coefficient of said second region." According to the prior claim language, an example of the recited first region with the smaller coupling coefficient would be the low  $\kappa$  region 21, shown in Figure 2, and an example of the recited second region with the

larger coupling coefficient would be the high  $\kappa$  region 20, also shown in Figure 2. (See page 11, lines 4-14). The ordering shown in Figure 2 is the phase controlling region 23 to the right, the low  $\kappa$  region 21 (first region) in the middle, and the high  $\kappa$  region 20 to the left (second region), i.e. the phase controlling region, the first region, and the second region are all serially connected, as was recited in the prior claim language.

Even though Applicant submits that the prior claim language was sufficiently definite under Section 112, second paragraph, Applicant has merely reversed the labeling of "first region" and "second region" in the claims. However, this label change does not affect the claimed ordering, i.e., the claims still require that the phase controlling region, a lower coefficient region, and a higher coefficient region be serially coupled in this order, as is described in the specification. Therefore, Applicant submits that the claims are still sufficiently definite, and that the recited ordering in the claims must be given patentable weight. Accordingly, Applicant respectfully requests withdrawal of the Section 112, second paragraph, rejections.

The Office Action includes a rejection of Claims 10-24 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,757,840 (Hiroki). Applicant respectfully traverses these rejections and submits that independent Claims 10, 19, 20, and 23, together with the remaining dependent claims, are patentably distinct from Hiroki for at least the following reasons.

Claim 10 requires a laser including a first region with a first waveguide, a second region with a second waveguide, and a phase controlling region with a third waveguide. The first waveguide includes a first diffraction grating, and the second waveguide includes a second diffraction grating. The phase controlling region includes

control means for controlling an effective refractive index of the third waveguide, wherein the phase controlling region, the second region, and the first region are serially coupled in this order, and are constructed such that a coupling coefficient of the diffraction grating of the second region adjacent to the phase controlling region is smaller than a coupling coefficient of the diffraction grating of the first region. The first and second diffraction gratings have a common value of pitch.

A notable feature of Claim 10 is that the phase controlling region, the second region, and the first region are serially coupled in this order. Support for this feature can be found in the specification at least at page 11, lines 4-14, and page 11, line 25, to page 12, line 4, which are described in reference to Figure 2. (It is to be understood, of course, that the scope of Claim 10 is not limited to the details of this embodiment, which is referred to only for purposes of illustration.)

In rejecting Claim 10, the Office Action refers to Figure 8 of Hiroki. However, this figure shows a second active region 125b, followed by a phase control region 124, followed by a first active region 125a. In contrast, Claim 10 requires a phase controlling region, followed by a second region, followed by a first region. Further, Applicant has not found anything in the remaining disclosure of Hiroki that is believed to teach or suggest to a person having ordinary skill in the relevant art the phase controlling region, the second region, and the first region serially coupled in this order. Accordingly,

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Applicant submits that Claim 10 is patentable over Hiroki, and respectfully requests withdrawal of the Section 102(e) rejection.

Independent Claims 19, 20, and 23 include the same feature of the phase controlling region, the second region, and the first region serially coupled in this order, as discussed above in connection with Claim 10, and are believed to be patentable for at least the same reasons.

The other rejected claims in this application depend from one or another of the independent claims discussed above and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual consideration or reconsideration, as the case may be, of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and the allowance of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

  
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